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RECOMMENDATIONS ON THE FY2001 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARD (STAA) NOMINATIONS: AN SAB REPORT

A REPORT BY THE SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARDS SUBCOMMITTEE OF THE EPA SCIENCE ADVISORY BOARD

Embargoed Version

List of Recommended Awardees (Appendix A) is Not Included.

The Full Report with Appendix A will be posted and available after January 31, 2003 in order to give ORD time to process the Awards.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

December 20, 2002

OFFICE OF THE ADMINISTRATOR
SCIENCE ADVISORY BOARD

EPA-SAB-EC-03-003

Honorable Christine Todd Whitman
Administrator
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, DC 20460

Subject: Recommendations on the FY2001 Scientific and Technological Achievement Awards (STAA) Award Nominations: An SAB Report

Dear Governor Whitman:

The EPA Science Advisory Board's (SAB) Scientific and Technological Achievement Awards (STAA) Subcommittee has completed its review of the nominations submitted by the Agency for the FY2001 awards program. The Subcommittee conducted its review in closed session on July 10-12, 2002 in Washington, DC. The results of the Subcommittee's efforts were reviewed and approved by the EPA Science Advisory Board's Executive Committee at a public teleconference meeting held on December 5, 2002.

The STAA program is sponsored by the Office of Research and Development (ORD), which continues to do a creditable job in soliciting and assembling these nominations. Each year (except for 1995 during the government-wide shutdown) the Board convenes a special panel to review nominated papers published by Agency researchers. Our recommendations for awards and further improvements in the STAA program are discussed in the enclosed report. We delayed final completion of this report in order to give ORD Staff ample time to process the 76 awards involving some 180 staff across the Agency.

The Agency solicited nominations in eleven categories this year: Control Systems & Technology (CS), Ecology & Ecosystem Risk Assessment & Ecosystem Protection (ER), Health Effects & Health Risk Assessment (HE), Monitoring & Measurement Methods (MM), Transport & Fate (TF), Review Articles (RA), Risk Management and Policy Formulation (RM), Integrated Risk Management (IR), Social Sciences (SS), Environmental Trends for Drivers of Future Risk

(EF), and Environmental Education (EE). Agency scientists and engineers submitted a total of 140 nominations from among the first nine categories. Nominations were not submitted for the last two categories this year (EF and EE). We recommend a total of 37 for a cash award, and recommend an additional 39 for Honorable Mention.

We have included recommendations for awards in eight of the nine categories for which nominations were submitted. In addition, the Subcommittee is recommending 39 papers for Honorable Mention. The authors whose papers were recommended for awards this year represent the Office of Policy, Economics, and Innovation (OPEI), and 11 research laboratories and centers within the Office of Research and Development.

The Subcommittee continues to encourage the Agency to nominate peer-reviewed papers from all programs and areas of scientific and technological research because scientific and technological achievements in these areas should not be limited to ORD laboratories. As we have pointed out in each of our recent reports, the Subcommittee notes the continuing lack of a significant number of nominations from Program areas other than ORD. Last year, for instance, we recommended awards for papers from ORD, OPEI, OPPTS, OSWER, OAR, and Region VIII. This year, only papers from ORD and OPEI were recommended, and just one from OPEI.

The process of publishing high quality EPA scientific findings in peer reviewed journals enhances the rigor of the science and the reputation of the Agency and its programs. Managers should encourage and provide the opportunities for their program scientists and engineers to conduct challenging investigations and publish the data and technical analysis which address aspects of the Agency's policies and regulations. We commend the staff of ORD for administering the STAA program. The ORD staff has made significant improvements in the program and in the nomination packages which have facilitated the Subcommittee's review procedures. The Subcommittee strongly recommends that ORD management continue to solicit participation of other Agency scientists and engineers as part of the Agency's goals to improve its scientific underpinnings and peer review of regulatory science. We recommend that ORD continue to announce this program early and that additional efforts be made to advertise it even more broadly next year to ensure greater participation by all program areas of the Agency.

The Subcommittee continues to feel that the STAA program is an important mechanism for recognizing and promoting high quality, peer-reviewed work published in top scientific and technological journals. This is even more critical as Agency programs continue to improve their overall commitment to, and compliance with the Agency's Peer Review Policy and the Peer Review Handbook. Furthermore, it supports your emphasis on sound science forming the basis for sound decisions.

We would appreciate being informed of the final disposition of awards and the mechanisms by which EPA advertises these awards to the Agency at large and the overall scientific community. This has been a long standing request by the Subcommittee and was the subject of a separate Commentary last year.

We are pleased to have participated in this process once again and believe it is appropriate for the Board to continue this annual review function. We look forward to serving the Agency again in this important activity.

Sincerely,

/Signed/
Dr. William Glaze, Chair
EPA Science Advisory Board

/Signed/
Dr. C. H. Ward, Chair
Scientific and Technological Achievement Awards Subcommittee
EPA Science Advisory Board

NOTICE

This report has been written as part of the activities of the EPA Science Advisory Board, a public advisory group providing extramural scientific information and advice to the Administrator and other officials of the Environmental Protection Agency. The Board is structured to provide balanced, expert assessment of scientific matters related to problems facing the Agency. This report has not been reviewed for approval by the Agency and, hence, the contents of this report do not necessarily represent the views and policies of the Environmental Protection Agency, nor of other agencies in the Executive Branch of the Federal government, nor does mention of trade names or commercial products constitute a recommendation for use.

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ABSTRACT

This report represents the conclusions and recommendations of the U.S. Environmental Protection Agency's Science Advisory Board regarding the FY2001 EPA Scientific and Technological Achievement Awards (STAA) Program. The STAA Program is an Agency-wide competition to promote and recognize scientific and technological achievements by EPA employees, fostering a greater exposure of EPA research to the public. The Program was initiated in 1980 and is managed by the Office of Research and Development (ORD).

The Agency submitted for review 140 nominations from the first nine of the eleven award categories this year (Control Systems & Technology, Ecology & Ecosystem Risk Assessment & Ecosystem protection, Health Effects & Health Risk Assessment, Monitoring & Measurement Methods, Transport & Fate, Review Articles, Risk Management and Policy Formulation, Integrated Risk Management, Social Sciences, Environmental Trends for Drivers of Future Risk, and Environmental Education). Of these, the Subcommittee recommended 37 nominations (26 percent of the nominations) for awards, and also recommended that 39 additional nominations be recognized with Honorable Mention. The authors whose papers were recommended for awards this year represent the Office of Policy, Economics, and Innovation (OPEI), and 11 research laboratories and centers within the Office of Research and Development

The Subcommittee encouraged the Agency to continue support for the STAA program as a mechanism for recognizing and promoting high quality research in support of the Agency's mission. The Subcommittee also strongly encouraged that EPA broadly acknowledge the results of the award competition.

KEY WORDS: Awards, Technology, Scientific Achievements, Peer-Review

U.S. Environmental Protection Agency
EPA Science Advisory Board
2001 Scientific And Technological Achievement Awards Subcommittee*

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* Members of this SAB Panel consist of

a) SAB Members: Experts appointed by the Administrator to serve on one of the SAB Standing Committees.

b) SAB Consultants: Experts appointed by the SAB Staff Director to a one-year term to serve on ad hoc Panels formed to address a particular issue.

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1. EXECUTIVE SUMMARY

The Scientific and Technological Achievement Awards (STAA) Subcommittee of the EPA Science Advisory Board (SAB) reviewed and evaluated the 140 nominations for the FY2001 program that were submitted by EPA research laboratory directors and program office directors. The Subcommittee met in Washington, DC, on July 10-12, 2002, to determine award recommendations.

The STAA review program is a long-standing partnership between the Agency and the EPA Science Advisory Board. Each year since 1980 Agency scientists and engineers have submitted nominated scientific and technological papers through an internal Agency review process managed by the Office of Research and Development (ORD). (Note: The Agency did not conduct the STAA Program during 1995 when there was a government-wide shutdown.) This review process ensures that the best scientific papers are submitted to the SAB for evaluation in the awards process. The SAB convenes an experienced group of scientists and engineers who meet in a closed meeting to review and evaluate the nominations. The SAB review panel produces a set of award recommendations which ORD uses in preparing the actual awards.

This year, the Subcommittee recommended 37 nominations for awards and recommended that 39 additional papers be recognized with Honorable Mention. The Subcommittee applied the evaluation criteria evenly across all nomination categories, without attempting to ensure equal numbers or percentages of awards in each category. The offices from which papers were recommended for awards this year are the Office of Policy, Economics, and Innovation (OPEI), and 11 research laboratories and centers within the Office of Research and Development

The Subcommittee recommends that continued attention be paid to providing opportunities for EPA's scientists, engineers, and other technical personnel to conduct challenging, soundly based studies that result in peer-reviewed papers having high impact on important scientific issues and issues of specific importance to EPA.

2. INTRODUCTION

2.1 Request for EPA Science Advisory Board (SAB) Review

At the request of the EPA Office of Research and Development (ORD), the EPA Science Advisory Board convened a subcommittee to review and evaluate scientific and technological papers published in peer-reviewed journals by EPA authors and nominated for the FY2001 EPA Scientific and Technological Achievement Awards (STAA) program. The STAA Subcommittee was asked to evaluate nominated papers for awards based on the rules developed by ORD. In January 2002, the Office of Research and Development (ORD) provided the SAB with copies of 140 nominations. The Subcommittee used the 2001 STAA Nomination Procedures and Guidelines, which describes the award levels, eligibility criteria (including the minimum EPA contribution and employer status of the principal author), and the criteria the SAB should use to evaluate the nominations. Although there are eleven nomination categories, ORD only received nominations in nine categories this year. ORD grouped the papers into these nine categories of science and technology[1], and screened the papers for conformance with the nomination guidelines. No nominations were submitted in the other two categories this year.[2]

As described in the 2002 STAA Nomination Procedures and Guidelines, the SAB was asked to recommend papers for each of three Levels of Award.

a) Level I awards - are for nominees who have accomplished an exceptionally high-quality research or technological effort. The nomination should recognize the creation or general revision of scientific or technological principle or procedure, or a highly significant improvement in the value of a device, activity, program, or service to the public. It must be at least of national significance or have high impact on a broad area of science/technology. The nomination must be of far reaching consequences and recognizable as a major scientific/technological achievement within its discipline or field of study.

b) Level II awards - are for nominees who have accomplished a notably excellent research or technological effort that has qualities and values similar to, but to a lesser degree, than those described under Level I. It must have timely consequences and contribute as an important scientific/technological achievement within its discipline or field of study.

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[1] These categories are: Control Systems & Technology (CS), Ecology & Ecosystem Risk Assessment (ER), Health Effects & Health Risk Assessment (HE), Monitoring & Measurement Methods (MM), Transport & Fate (TF), Review Articles (RA), Risk Management and Policy Formulation (RM), Integrated Risk Management (IR), and Social Sciences (SS)

[2] These categories are: Environmental Education (EE) and Environmental Trends for Drivers of Future Risk (EF).

c) Level III awards - are for nominees who have accomplished an unusually notable research or technological effort. The nomination can be for a substantial revision or modification of a scientific/technological principle or procedure, or an important improvement to the value of a device, activity, program, or service to the public. It must relate to a mission or organizational component of the EPA, or significantly affect a relevant area of science/technology.

d) Honorable Mention - The Subcommittee has also added a fourth non-cash level award for nominations which are noteworthy but which do not warrant a Level I, II or III award. Honorable Mention applies to nominations that: (1) may not quite reach the level described for a Level III award; (2) show a promising area of research that the Subcommittee wants to encourage; or (3) show an area of research that the Subcommittees feels is too preliminary to warrant an award recommendation (yet).

2.2 Subcommittee Review Procedures

The Review Panel was convened as an *ad hoc* subcommittee of the EPA Science Advisory Board (SAB). Membership included a significant number of returning STAA panelists; consequently, the level of experience with the process matched the level of scientific and technical expertise. In addition, many panelists hold editorial positions on highly regarded scientific journals.

Copies of all nominations/papers and the award program guidelines and nomination evaluation criteria were provided to Subcommittee members in advance of the review meeting. Subcommittee members selected nominations/papers to review based on their expertise, being sure to select, when appropriate, papers from across all nomination categories. Typically, each Subcommittee member chose at least 35 nominations to review. Members were encouraged to include nominations from areas of general expertise as well as areas in which they were most familiar. As part of the evaluation, Subcommittee members were asked to rank their own expertise in the field of science and technology addressed by each nomination they selected for review. These rankings were considered by the Subcommittee during the evaluation of each nomination. Each nomination was reviewed by at least three qualified Subcommittee members and then presented to the full Subcommittee and discussed during the review and evaluation meeting that was held in Washington, DC on July 10-12, 2002. Nominations judged to merit an award at some level were reviewed a second time by the Subcommittee, and in most cases, a third time, to ensure that a complete evaluation had been made and that the appropriate award level was recommended. Nominations that were initially not recommended for an award were also re-reviewed to determine if the nomination might merit either an Honorable Mention or numerical award.

In reviewing the nominations, the Subcommittee members qualitatively considered evaluation criteria factors such as: the overall impact of the nominated paper(s) on scientific

knowledge or technology relevant to environmental issues; the level of effort; the creativity, originality, initiative, and problem solving exhibited by the researchers; the beneficial impacts of the accomplishments and the recognition of the results outside the Agency; the extent to which an Agency function, mission, program, activity, or service is improved; and the nature and extent of the peer review, including the stature of the journal.[3]

Prior to the review and evaluation meeting, Subcommittee members forwarded the results of their review to the Designated Federal Officer (DFO) for the Subcommittee. The initial ranking along with the self-professed expertise of each reviewer for that particular nomination was compiled by the DFO in a tabular format (see Table I for an example) and then

Table I - Example of how Initial Individual Reviewer Rankings are Compiled

(Data for illustration purposes only)

Nomination Number	Title of Nomination	Reviewer			Final Ranking (at meeting)
		Name	Expertise *	Initial Individual Ranking	
HE0019	Health Assessment: Trinitrochicken wire	Dr. Smith Dr. Jones Dr. Adams	2 3 4	NR III NR	NR
ER0122	Ecological Impacts of Trinitrochicken wire	Dr. Smith Dr. Jones Dr. Adams Dr. Williams	4 3 2 3	HM III NR III	III
RA0098	Trinitrochicken wire - A Review	Dr. Black Dr. Green Dr. Jackson Dr. White	3 4 2 1	I I II III	I

* Expertise levels are rated as follows: 1 = not related to major discipline of reviewer; 2 = general knowledge of research area; 3 = general knowledge of active research; and 4 = specific area of active research. NR = Not Recommended for an award; HM = Honorable Mention; I, II, III = Award Levels

used at the review and evaluation meeting to help focus the discussion on each individual nomination. Initial individual rankings were subject to change based on discussions at the review and evaluation meeting. The final ranking agreed to at that meeting is a consensus ranking. The examples given in Table I are illustrative. All nominations receiving a recommendation for a Level I, II or III award or an Honorable Mention are listed in Appendix A.

The Subcommittee met on July 10-12, 2002, in Washington, DC in a closed session due to the discussions of issues concerning personal privacy and potential cash awards. Consistent

[3] These criteria are discussed more fully in section VII of the 1998 Nomination Procedures and Guidelines provided to the Subcommittee by the Agency.

with the requirements of the Federal Advisory Committee Act (Public Law 92-463) 5 U.S.C. App.2, and sections 552(b)(2) and (b)(6) of the Administrative Procedure Act, 5 U.S.C. 552(b)(2) and 552(b)(6), this closed meeting was announced in a Federal Register[4] notice signed by the EPA Administrator. All Subcommittee members were present at the meeting. The Subcommittee developed preliminary ratings for papers in each category, including discussion of each nominated paper. After completing all preliminary evaluations, the Subcommittee revisited the recommendations category by category to resolve any final issues and ensure consistency in applying the award criteria across categories.

This Subcommittee report was reviewed and approved by the SAB's Executive Committee (EC) at its public teleconference meeting on December 5, 2002 in Washington, DC. For that review, the Subcommittee report, less the actual award recommendations (Appendix A), was made available to the EC and the interested public.

[4] 67 Federal Register 44200, July 1, 2002.

3. EVALUATION OF THE FY2001 SCIENTIFIC AND TECHNOLOGICAL ACHIEVEMENT AWARD NOMINATIONS

3.1 General Findings of the Subcommittee

In recent years, based on the continuing decline in the number of our recommendations for Level I and Level II awards (see Table II - Comparison of Level I & II Awards over Time), the Subcommittee has felt that the overall quality of the papers nominated has been declining. This year, we are happy to report, has shown an increase in Level I (from two to four) awards.

Table II - Comparison of Level I & II Awards over Time

Award Level	FY1996	FY1997	FY1998	FY1999	FY2000	FY2001
Level I	4	3	1	0	2	4
Level II	16	11	7	5	11	7
Total Level I & II	20	14	8	5	13	11

We hope this is indicative of rise in the overall quality of submitted nominations and will be a continuing trend in the coming years. The STAA program is an important mechanism for recognizing and promoting high quality, peer-reviewed work published in top scientific and technological journals. The STAA Program can also serve as a benchmark for the quality of the research produced by the Agency since the same metrics and level and breadth of expertise of reviewers (Subcommittee members) are used each year. The authors whose papers were recommended for awards this year represent the Office of Policy, Economics, and Innovation (OPEI), and 11 research laboratories and centers within the Office of Research and Development.

The Subcommittee recommends that ORD continue to request the submission of nominations early, and that ORD advertise the program more aggressively, so that Regional and Program offices have adequate time to prepare their nominations. The limited number of nominations from outside of ORD was again a disappointment to the Subcommittee; especially the decrease from six to one nominations over last year. While we recognize that most of the in-house research is conducted by ORD scientists in ORD laboratories, the submission process needs to encourage submissions from outside of ORD as well.

The Subcommittee also encourages the Agency to continue to broaden the scope of nominated papers and to promote multi-disciplinary research that directly supports risk management and policy decisions. In evaluating nominations for awards, the Subcommittee looked for papers with well-developed hypotheses, good sampling or experimental design, and where the theoretical basis is verified by field validation or thorough testing of a model. We also looked for innovative applications of theories from other disciplines and collaborations of

interdisciplinary teams of scientists and engineers. In addition, the Subcommittee encourages the submission of nominations which address exposure assessment.

In order to evaluate papers that present incremental results in a series of published works, the Subcommittee recommends that the nomination guidelines prepared by ORD explicitly require discussion of related research published previously by the lead author(s), including information on any STAA awards given. When possible, nominations should include all papers in a series, providing they are within the time limit. This would allow a series of incremental studies to be evaluated for an award as a package.

Once again this year, the Subcommittee has recommended awards (including one Level I and one Level II award) in the Risk Management and Policy Formulation (RM) category. The Subcommittee hopes to see more peer reviewed papers nominated in this category next year, as this is an important area of research for the Agency. In addition, one paper was submitted in the Integrated Risk Assessment category, and while an award was not recommended, the Subcommittee was encouraged to see a nomination in this category and hopes to see additional nominations in the future. The Subcommittee feels that the process of converting Agency policy analysis and the technical foundations of its rule making into scientific articles for peer review is essential to maintain the quality in its science. This is also an important way to improve the Agency's reputation for scientific achievement. Laboratory directors and program managers should encourage the authors of policy formulation papers and regulatory impact analyses to develop technical articles for peer reviewed literature.

The focus of nominated papers should be on investigation and the creation of new technology and scientific and technical knowledge and information, rather than the reporting and communication of existing information, such as describing environmental regulations or current methods for pollution control. While such papers are extremely valuable and important for the agency, and the articles may be well-written and effective, they do not really fit within the purview of achievements in science and technology. The STAA Program is designed to recognize accomplishments in science and technology, hence, nominations in these fields and others should be focused on the new significant scientific knowledge developed by the Agency in these fields. Review articles with new and useful analysis and synthesis of existing information also are important; and in fact, several were recognized this year.

Finally, the Subcommittee believes that the STAA program provides one view of the technical and scientific progress that the Agency is making in various areas of research. This year's activities represent strengths in a variety of technological assessments, analytical measurements, and in certain areas of human health effects research.

3.2 STAA Program Administrative Recommendations

The Subcommittee commends the staff of ORD for administering the STAA program. The staff has made significant improvements in the program and the nomination packages that

have facilitated the Subcommittee's review procedures. The Subcommittee recommends that ORD management continue to solicit participation of other Agency scientists and engineers as part of the Agency's goals to improve its scientific underpinnings and peer review of regulatory science.

In the last few years, the Subcommittee has made a number of recommendations to ORD staff and managers that work with the STAA program, and through them, to the authors of the nominated papers. We are pleased to see that many of these recommendations have already been implemented. We appreciate the effort to accommodate our recommendations and, as a result, look forward to an even more improved program next year. We reiterate the following recommendations and/or comments:

a) Review articles (Category RA) must include a synthesis and an analysis, not just a summary of relevant literature.

b) The suggested citations provided for many of the nominations need to reflect the value of the work to the Agency. Once again, as was the case last year, many of this year's submissions merely contained a statement that reflected the nature of the research without any indication of the value of the work to EPA.

c) The Subcommittee again strongly urges the Agency to publicize the names of the award winning scientists and engineers and their papers both within the Agency and outside the Agency in a variety of ways. For example, the Agency should announce these winners by placing the title and abstract of their papers, along with the source of the paper, on the Agency's Website. The Agency should also develop press releases or letters from the Administrator that are targeted toward the journal that published the articles, professional society newsletters, and local newspapers in the vicinity of the scientist/engineer's research facility.

d) Subcommittee has requested, but has yet to receive any feedback from the Agency regarding how the Agency has handled the announcement of award winners or the general approach EPA has taken to present the awards themselves.

3.3 Award Recommendations

The EPA authors recommended for awards include scientists and engineers from the Office of Policy, Economics, and Innovation (OPEI), and 11 research laboratories and centers within the Office of Research and Development. See the detailed breakout of authors in Appendix A for further clarification.

Awards were recommended in eight of the eleven nomination categories, and for eight of the nine categories for which nominations were submitted. A total of 37 nominations were recommended for awards. A summary of the distribution of award recommendations

among categories is presented in Table III. There were 140 nominations with over 150 individual papers submitted. Of those submitted, 76 were recommended for an award (37) or

TABLE III - Summary of FY2001 Award Recommendations

Nomination Categories *	Total Nom.	Award Levels				Award %	Hon. Men.
		I	II	III	Tot		
Control Systems & Technology (CS)	17	0	1	0	1	6%	7
Ecology, Ecosystem Risk Assessment & Protection (ER)	26	0	0	3	3	12%	11
Health Effects, Health Risk Assessment (HE)	17	1	0	4	5	29%	1
Monitoring & Measurement Methods (MM)	35	2	1	10	13	37%	11
Transport and Fate (TF)	20	0	2	3	5	25%	3
Review Articles (RA)	19	0	2	5	7	37%	4
Risk Management & Policy Formulation (RM)	3	1	1	0	2	67%	1
Social Sciences (SS)	2	0	0	1	1	50%	0
Integrated Risk Assessment (IR)	1	0	0	0	0	0%	1
TOTALS:	**140**	**4**	**7**	**26**	**37**	**26%**	**39**

* Categories listed in the "1998 Nomination Procedures and Guidelines."

honorable mention (39). There were no re-categorized or combined nominations identified this year. The full list of award recommendations is contained in Appendix A. Eligible authors are noted in boldface in Appendix A. The percentage figure following their names reflects their individual level of effort on a given nomination as provided by EPA.

3.3.1 Level I Awards

Four Level I awards were recommended this year. Please see pages A-2 through A-6 of Appendix A for details.

3.3.2 Level II Awards

Seven Level II awards were recommended. Please see pages A-6 through A-8 of Appendix A for details.

3.3.3 Level III Awards

Twenty-six Level III awards were recommended. Please see pages A-8 through A-16 of Appendix A for details.

3.3.4 Honorable Mention

Thirty-nine nominations were judged as being worthy of an Honorable Mention. Please see pages A-16 through A-25 of Appendix A for details.

A list of acronyms used in Table A is on page A-25.

Appendix A - Nominations Recommended for Awards

This Appendix identifies the 37 nominations recommended for Level I, II, and III awards and the 39 nominations recommended for an Honorable Mention. This Appendix is divided into four parts. The first part (pages A-2 through A-6) provides information on the Level I award recommendations. The second part (pages A-6 through A-8) provides information on the Level II award recommendations. The third part (pages A-8 through A-16) provides information on the Level III award recommendations. The fourth part (pages A-16 through A-25) provides information on the Honorable Mention recommendations.

The first column (**Nom. #**) gives the nomination number as provided by EPA in the original submission. The second column (**Titles and Citations of Submitted Papers**) provides the full title and citation of all papers submitted as part of a given nomination. The third column (**Authors and Nominating Organization**) provides the name(s) of the EPA eligible authors along with their level of effort (percentage) on the nomination. The primary nominating organization is also listed. The fourth column **(Recommended Award Level**) indicates which award is recommended (Level I, II, or III or Honorable Mention). The last column (**Suggested Citation from Nominating Organization**) reflects the language of the citation that was provided to the Subcommittee by the Agency. These are <u>not</u> Subcommittee citations.

Appendix A of this report is embargoed until Jan 31, 2003